

FIG.1

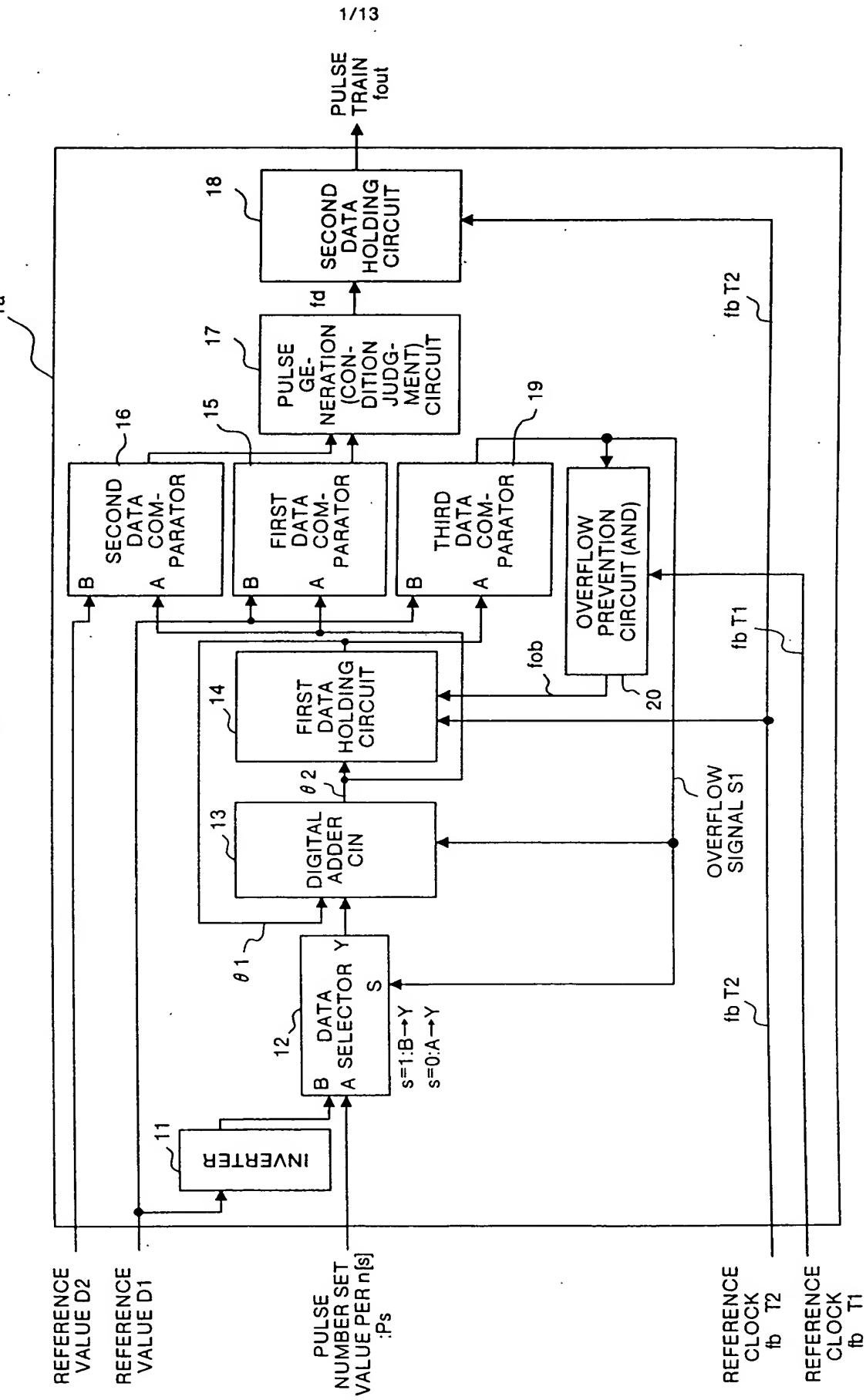


FIG.2

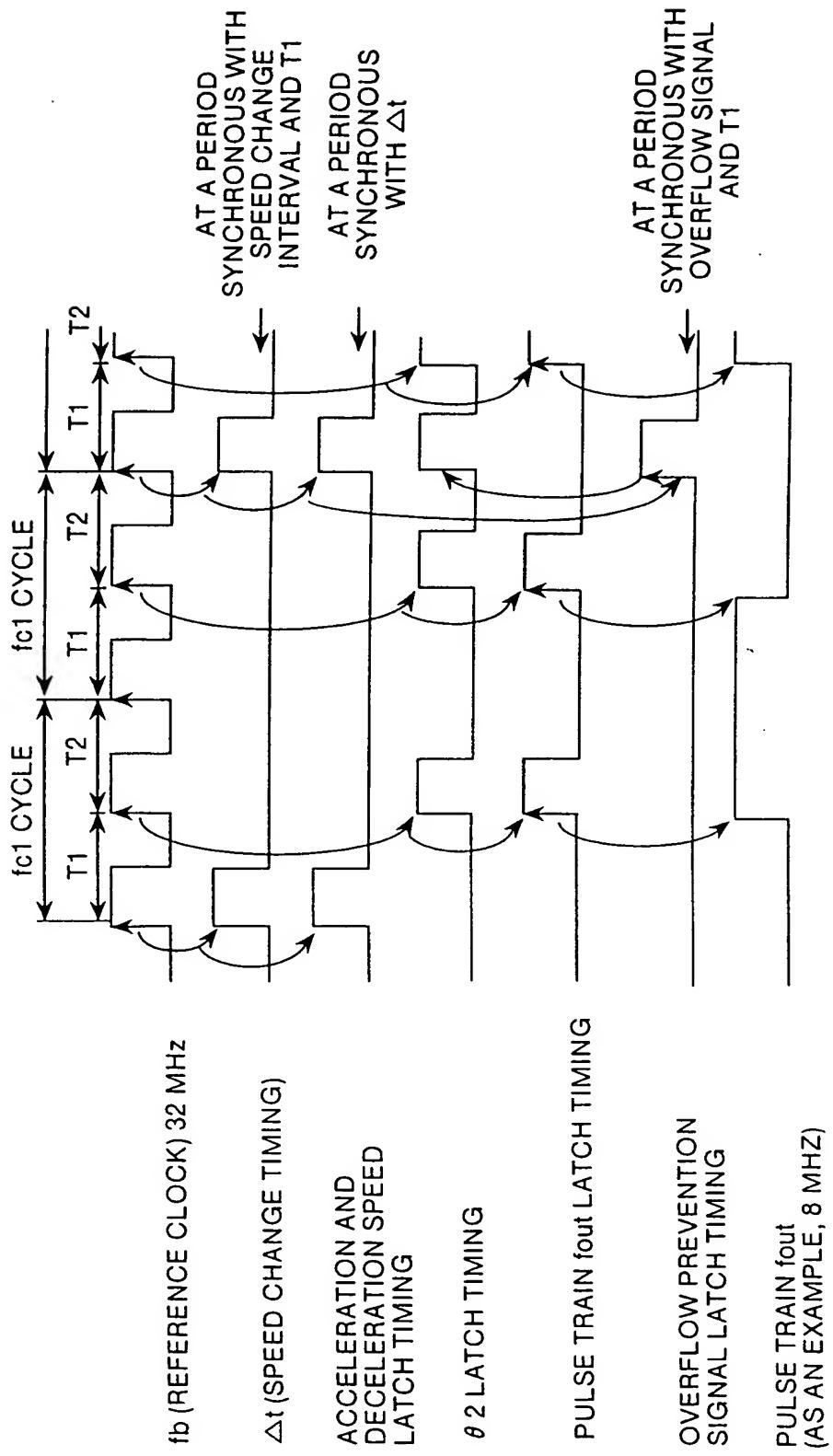


FIG. 3

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ELAPSED TIME [S]	V _p X n [Hz X n]	OUTPUT VALUE θ_1 OF FIRST DATA HOLDING CIRCUIT 14	OVERFLOW SIGNAL $\theta_1 \geq$ D1 WHEN 1	OUTPUT VALUE θ_2 OF DIGITAL ADDER 13	VALUE f _d	VALUE f _{out} (LATCHED AT T2)
0/32,000,000	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)
1/32,000,000 (T1)	8,000,000	0	0	$\theta_1 + V_p X n = 8,000,000$	0	0
2/32,000,000 (T2)	8,000,000			$\theta_1 + V_p X n = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 0
3/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 8,000,000	0	$\theta_1 + V_p X n = 16,000,000$	1	0
4/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	0	$\theta_1 + V_p X n = 24,000,000$	1	f _d IMMEDIATELY BEFORE = 1
5/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 16,000,000	0	$\theta_1 + V_p X n = 24,000,000$	1	1
6/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 24,000,000	0	$\theta_1 + V_p X n = 32,000,000$	0	f _d IMMEDIATELY BEFORE = 1
7/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 24,000,000	0	$\theta_1 + V_p X n = 32,000,000$	0	1
8/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 32,000,000	1	$\theta_1 - D1 = 0$	0	f _d IMMEDIATELY BEFORE = 0
9/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_p X n = 16,000,000$	1	0
10/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	0	$\theta_1 + V_p X n = 32,000,000$	0	f _d IMMEDIATELY BEFORE = 1
11/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 16,000,000	0	$\theta_1 + V_p X n = 32,000,000$	0	1
12/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 32,000,000	1	$\theta_1 - D1 = 0$	0	f _d IMMEDIATELY BEFORE = 0
13/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_p X n = 16,000,000$	1	0
14/32,000,000 (T2)	16,000,000	HOLD PREVIOUS θ_1 = 16,000,000	0	$\theta_1 + V_p X n = 32,000,000$	0	f _d IMMEDIATELY BEFORE = 1
15/32,000,000 (T1)	16,000,000			$\theta_1 + V_p X n = 32,000,000$	0	1
16/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 32,000,000	1	$\theta_1 - D1 = 0$	0	f _d IMMEDIATELY BEFORE = 0

FIG.4

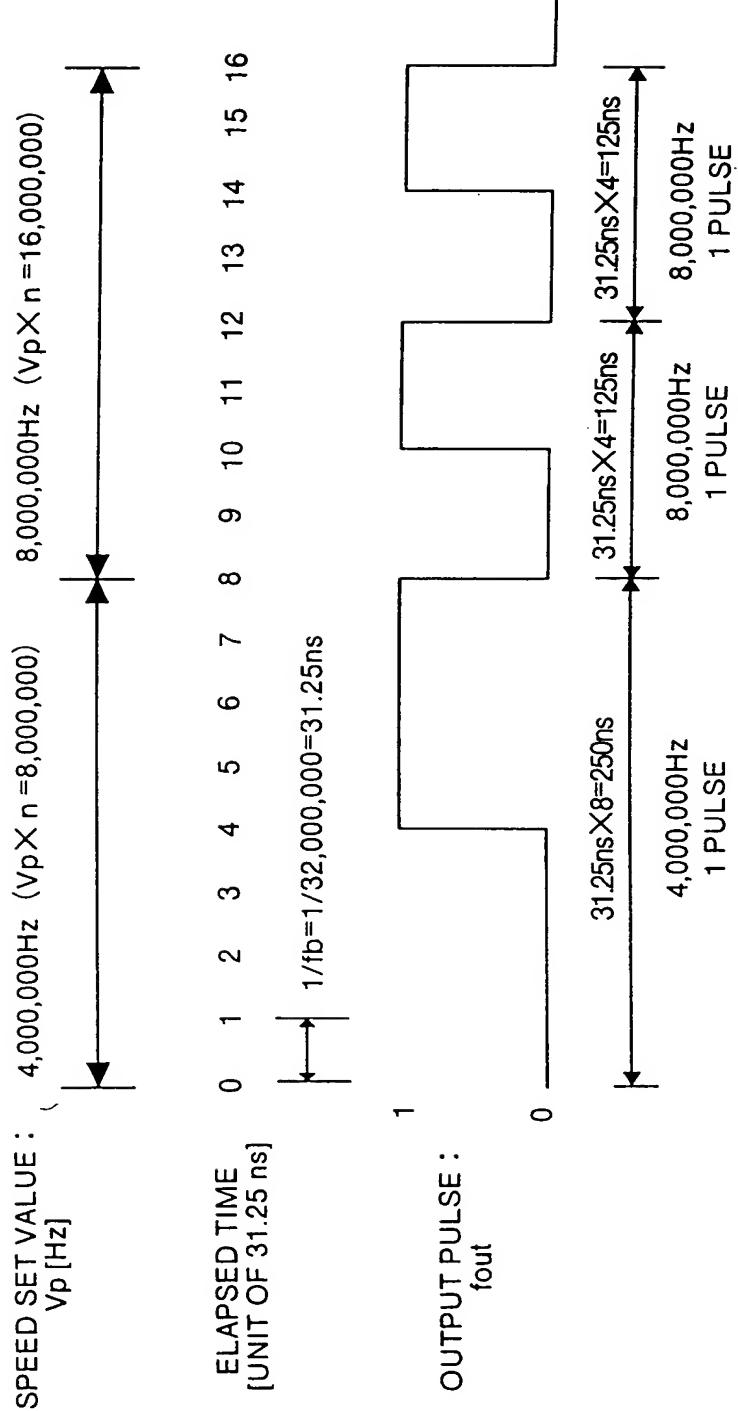


FIG.5

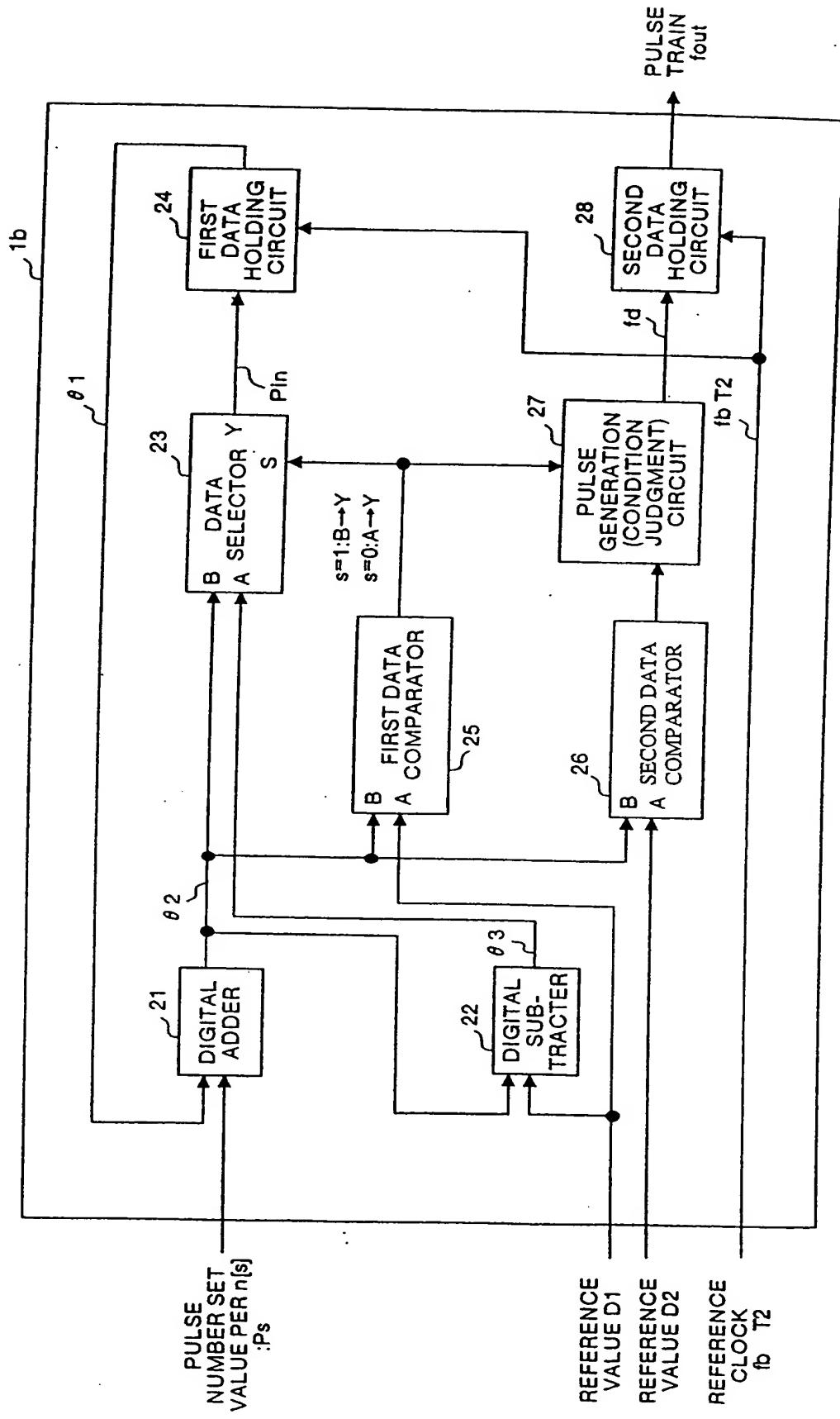


FIG.6

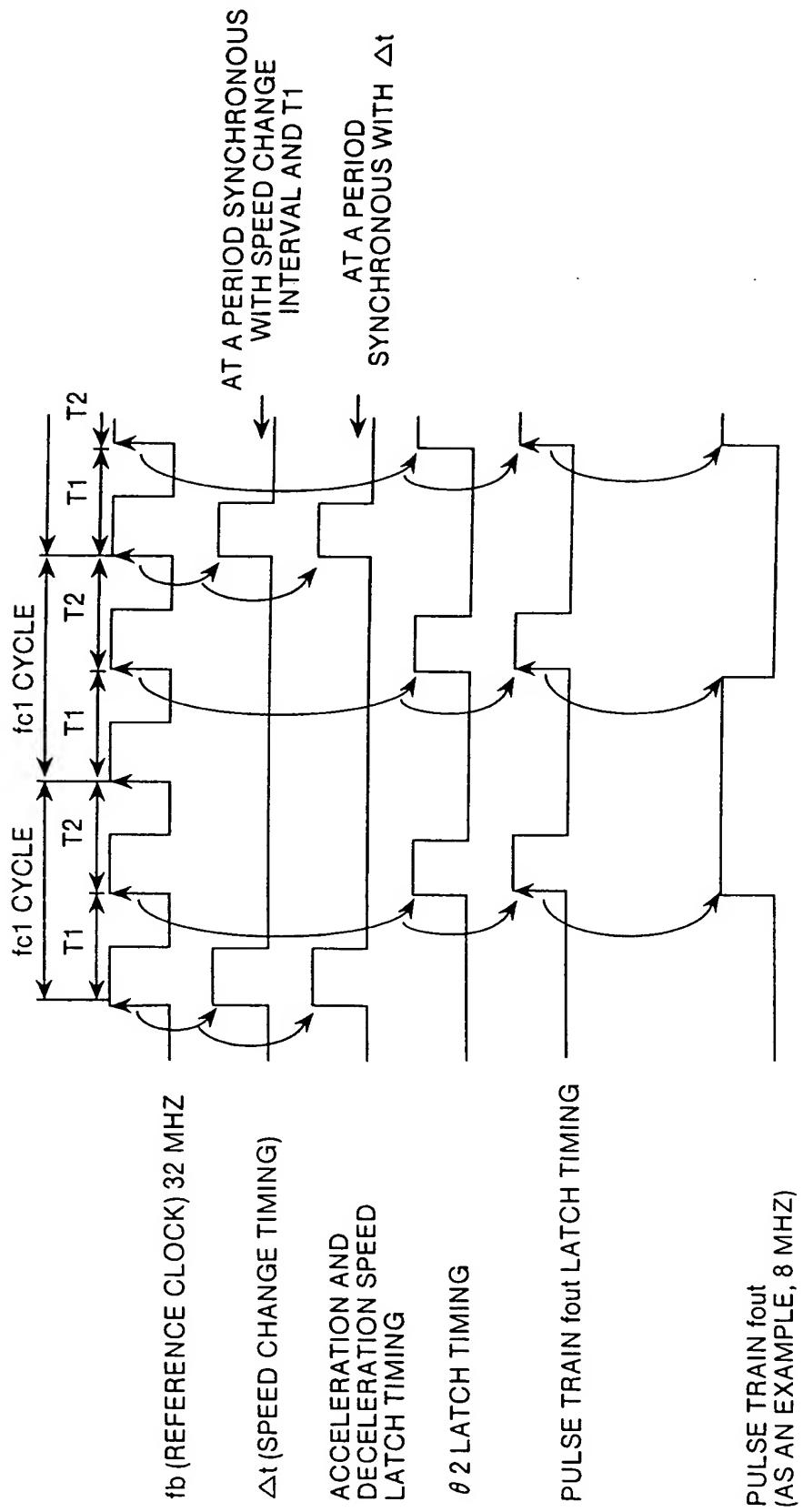


FIG. 7

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ELAPSED TIME [S]	V _{pXn} [HzXn]	OUTPUT VALUE θ_1 OF FIRST DATA HOLDING CIRCUIT 14	OUTPUT VALUE OF DIGITAL ADDER 21 $\theta_1 + V_p X_n = \theta_2$	OUTPUT VALUE OF DIGITAL SUBTRACTER 22 $\theta_2 - D_1 = \theta_3$	VALUE PIN θ_2 or θ_3	VALUE f_d	VALUE F _{OUT} (LATCHED AT T2)
0/32,000,000	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)
1/32,000,000 (T1)	8,000,000	0	8,000,000	-24,000,000	θ 2	0	0
2/32,000,000 (T2)	8,000,000	Pin IMMEDIATELY BEFORE = 8,000,000	16,000,000	-16,000,000	θ 2	1	f _d IMMEDIATELY BEFORE = 0
3/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 8,000,000	16,000,000	-16,000,000	θ 2	1	0
4/32,000,000 (T2)	8,000,000	Pin IMMEDIATELY BEFORE = 16,000,000	24,000,000	-8,000,000	θ 2	1	f _d IMMEDIATELY BEFORE = 1
5/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 16,000,000	24,000,000	-8,000,000	θ 2	1	1
6/32,000,000 (T2)	8,000,000	Pin IMMEDIATELY BEFORE = 24,000,000	32,000,000	0	θ 3	0	f _d IMMEDIATELY BEFORE = 1
7/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 24,000,000	32,000,000	0	θ 3	0	1
8/32,000,000 (T2)	8,000,000	Pin IMMEDIATELY BEFORE = 0	8,000,000	-24,000,000	θ 2	0	f _d IMMEDIATELY BEFORE = 0
9/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 0	16,000,000	-16,000,000	θ 2	1	0
10/32,000,000 (T2)	16,000,000	Pin IMMEDIATELY BEFORE = 16,000,000	32,000,000	0	θ 3	0	f _d IMMEDIATELY BEFORE = 1
11/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 16,000,000	32,000,000	0	θ 3	0	1
12/32,000,000 (T2)	16,000,000	Pin IMMEDIATELY BEFORE = 0	16,000,000	-16,000,000	θ 2	1	f _d IMMEDIATELY BEFORE = 0
13/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 0	16,000,000	-16,000,000	θ 2	1	0
14/32,000,000 (T2)	16,000,000	Pin IMMEDIATELY BEFORE = 16,000,000	32,000,000	0	θ 3	0	f _d IMMEDIATELY BEFORE = 1
15/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 16,000,000	32,000,000	0	θ 3	0	1
16/32,000,000 (T2)	16,000,000	Pin IMMEDIATELY BEFORE = 0	16,000,000	-16,000,000	θ 2	1	f _d IMMEDIATELY BEFORE = 0

FIG.8

1c

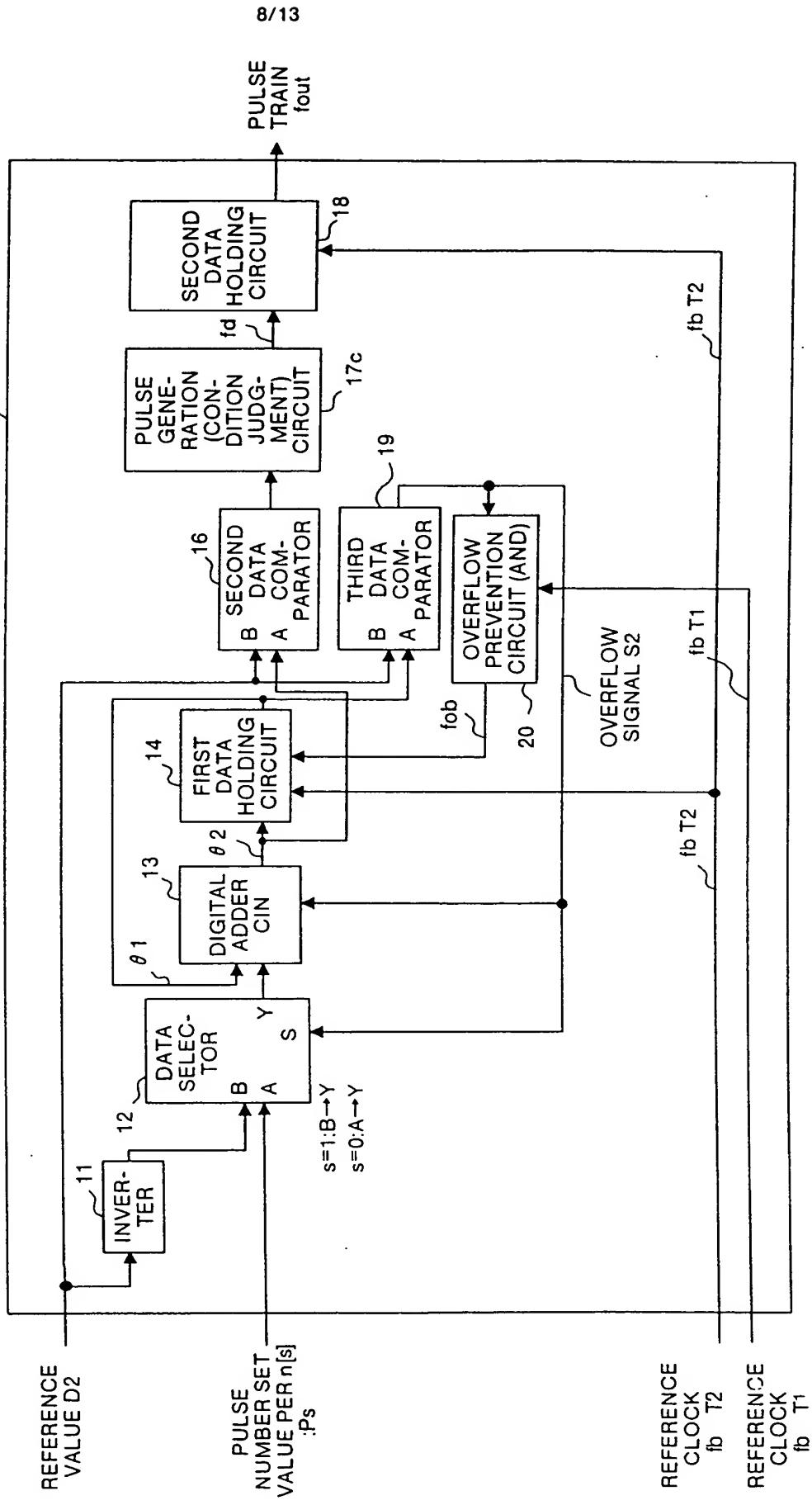


FIG.9

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ELAPSED TIME [S]	V _{pXn} [Hz X n]	OUTPUT VALUE θ_1 OF FIRST DATA HOLDING CIRCUIT 14	OVERFLOW SIGNAL $\theta_1 \geq$ D2 WHEN 1	OUTPUT VALUE θ_2 OF DIGITAL ADDER 13	VALUE f _d	VALUE f _d (LATCHED AT T2)
0/32,000,000	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)
1/32,000,000 (T1)	8,000,000	0	0	$\theta_1 + V_{pXn} = 8,000,000$	0	0
2/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 8,000,000	0	$\theta_1 + V_{pXn} = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 0
3/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 8,000,000	0	$\theta_1 + V_{pXn} = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 1
4/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	1 (ODD NUMBER OF TIMES)	$\theta_1 - D2 = 0$	1	f _d IMMEDIATELY BEFORE = 1
5/32,000,000 (T1)	8,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_{pXn} = 8,000,000$	1	f _d IMMEDIATELY BEFORE = 1
6/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 8,000,000	0	$\theta_1 + V_{pXn} = 16,000,000$	0	f _d IMMEDIATELY BEFORE = 0
7/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 8,000,000	0	$\theta_1 + V_{pXn} = 16,000,000$	0	f _d IMMEDIATELY BEFORE = 1
8/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	1 (EVEN NUMBER OF TIMES)	$\theta_1 - D2 = 0$	0	f _d IMMEDIATELY BEFORE = 0
9/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_{pXn} = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 0
10/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	1 (ODD NUMBER OF TIMES)	$\theta_1 - D2 = 0$	1	f _d IMMEDIATELY BEFORE = 1
11/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_{pXn} = 16,000,000$	0	f _d IMMEDIATELY BEFORE = 0
12/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	1 (EVEN NUMBER OF TIMES)	$\theta_1 - D2 = 0$	0	f _d IMMEDIATELY BEFORE = 1
13/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_{pXn} = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 0
14/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	1 (ODD NUMBER OF TIMES)	$\theta_1 - D2 = 0$	1	f _d IMMEDIATELY BEFORE = 1
15/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 0	0	$\theta_1 + V_{pXn} = 16,000,000$	0	f _d IMMEDIATELY BEFORE = 0
16/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	1 (EVEN NUMBER OF TIMES)	$\theta_1 - D2 = 0$	0	f _d IMMEDIATELY BEFORE = 1

FIG. 10

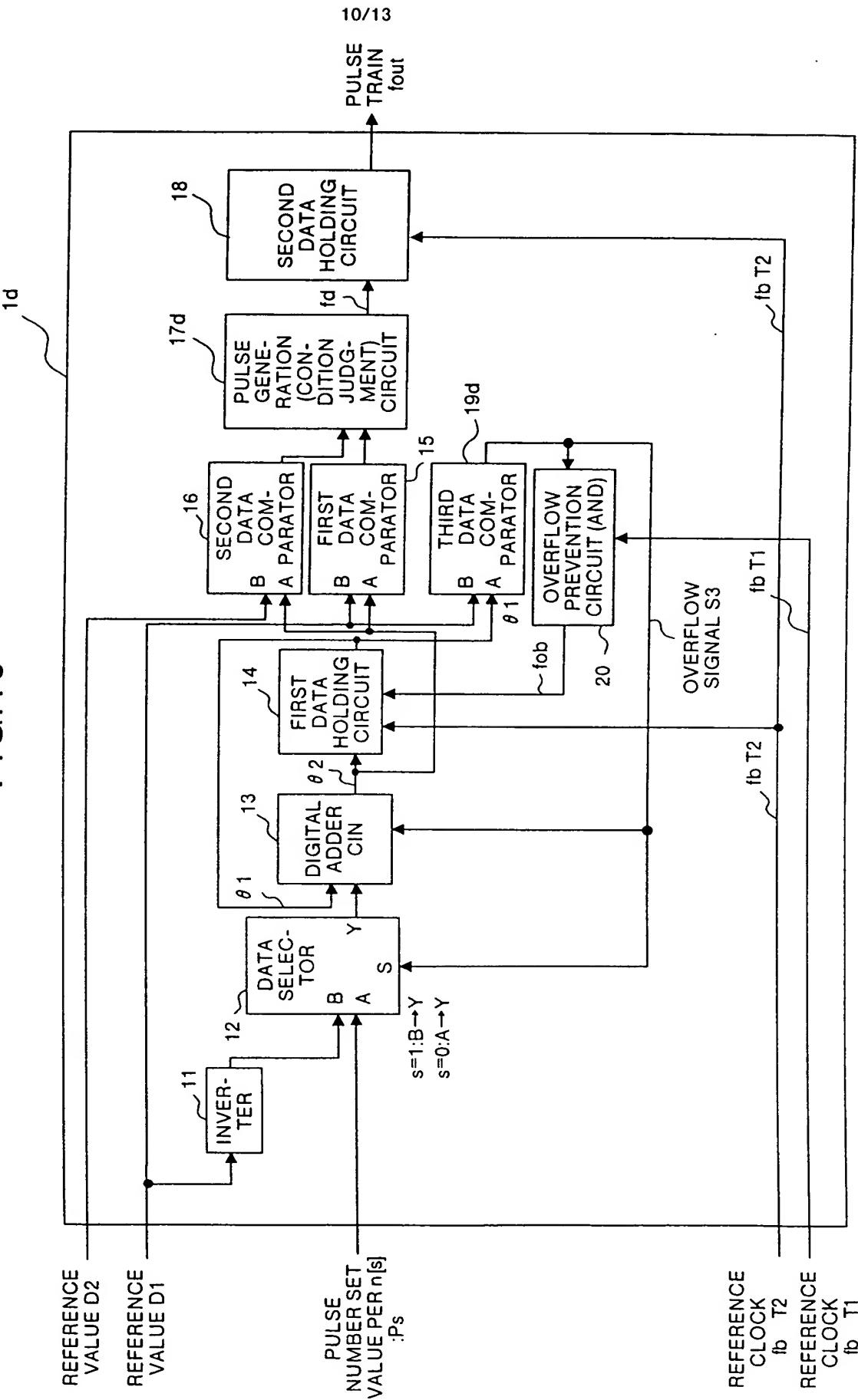


FIG. 11

ELAPSED TIME [S]	V _p X _n [Hz X n]	OUTPUT VALUE θ_1 OF FIRST DATA HOLDING CIRCUIT 14	OVERFLOW SIGNAL $\theta_1 >$ D1 WHEN 1	OUTPUT VALUE θ_2 OF DIGITAL ADDER 13	VALUE f_d	VALUE f _{out} (LATCHED AT T2)
0/32,000,000	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)	0 (INITIAL VALUE)
1/32,000,000 (T1)	8,000,000	0	0	$\theta_1 + V_p X_n = 8,000,000$	0	0
2/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 8,000,000	0	$\theta_1 + V_p X_n = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 0
3/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 8,000,000	0	$\theta_1 + V_p X_n = 16,000,000$	1	0
4/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	0	$\theta_1 + V_p X_n = 24,000,000$	1	f _d IMMEDIATELY BEFORE = 1
5/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 16,000,000	0	$\theta_1 + V_p X_n = 24,000,000$	1	1
6/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 24,000,000	0	$\theta_1 + V_p X_n = 32,000,000$	0	f _d IMMEDIATELY BEFORE = 1
7/32,000,000 (T1)	8,000,000	HOLD PREVIOUS θ_1 = 24,000,000	0	$\theta_1 + V_p X_n = 32,000,000$	0	1
8/32,000,000 (T2)	8,000,000	θ_2 IMMEDIATELY BEFORE = 32,000,000	0	$\theta_1 + V_p X_n = 40,000,000$	0	f _d IMMEDIATELY BEFORE = 0
9/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 32,000,000	0	$\theta_1 + V_p X_n = 48,000,000$	1	0
10/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 48,000,000	1	$\theta_1 - D1 = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 1
11/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	0	$\theta_1 + V_p X_n = 32,000,000$	0	1
12/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 32,000,000	0	$\theta_1 + V_p X_n = 48,000,000$	1	f _d IMMEDIATELY BEFORE = 0
13/32,000,000 (T1)	16,000,000	HOLD PREVIOUS θ_1 = 32,000,000	0	$\theta_1 + V_p X_n = 48,000,000$	1	0
14/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 48,000,000	1	$\theta_1 - D1 = 16,000,000$	1	f _d IMMEDIATELY BEFORE = 1
15/32,000,000 (T1)	16,000,000	θ_2 IMMEDIATELY BEFORE = 16,000,000	0	$\theta_1 + V_p X_n = 32,000,000$	0	1
16/32,000,000 (T2)	16,000,000	θ_2 IMMEDIATELY BEFORE = 32,000,000	0	$\theta_1 + V_p X_n = 48,000,000$	1	f _d IMMEDIATELY BEFORE = 0

FIG.12

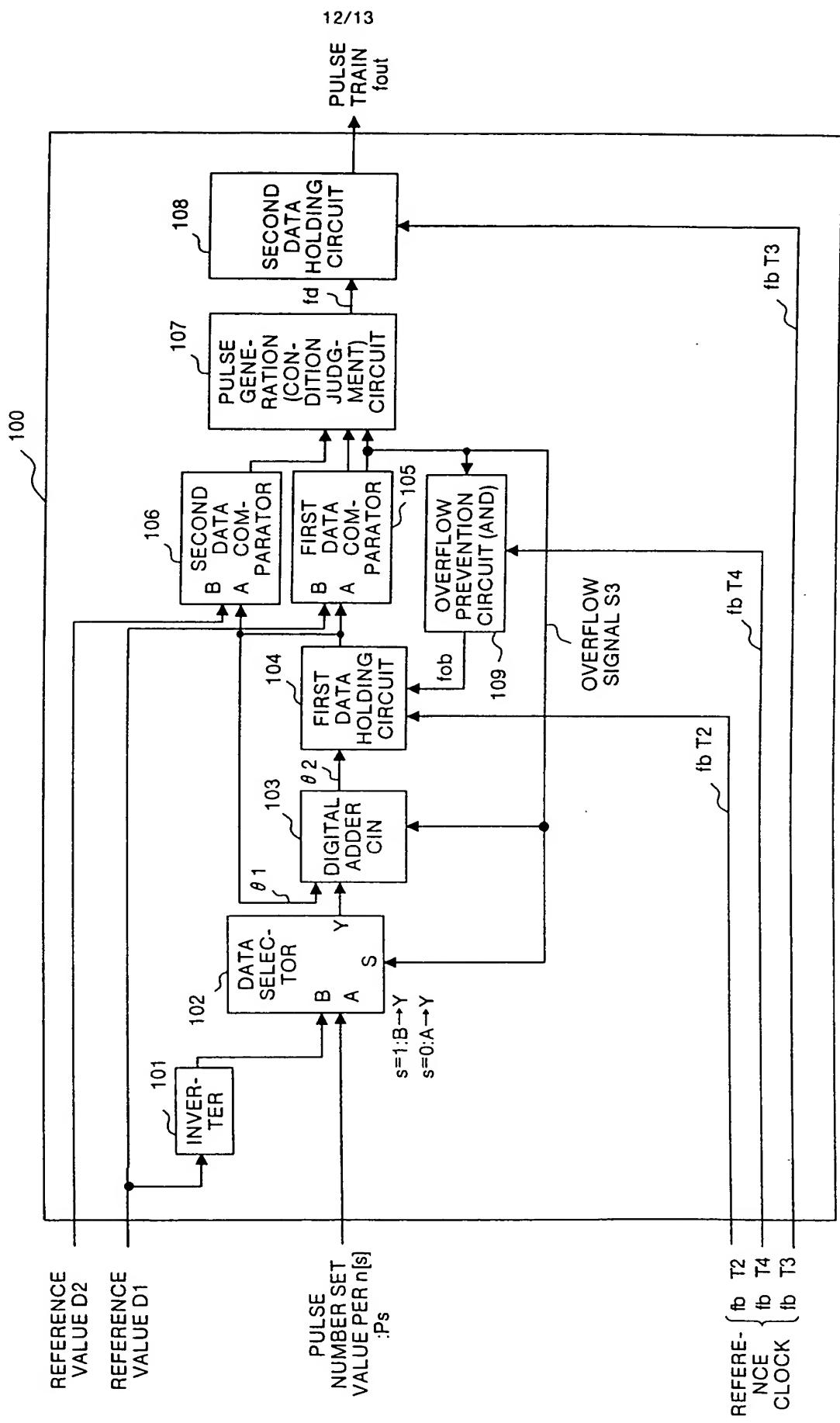


FIG.13

